KINGS BEACH COMMERCIAL CORE TRAFFIC STUDY

Draft Study Report Executive Summary

November 6, 2003

Prepared for Placer County Department of Public Works
Prepared by LSC Transportation Consultants, Inc.

Study Purpose

Placer County is developing a plan to implement streetscape improvements for the State Route (SR) 28 commercial corridor in Kings Beach, California. A key question regarding this project is the appropriate roadway and intersection configurations for the state highway corridor. LSC Transportation Consultants, Inc. has be retained by the County to evaluate traffic conditions under two corridor alternatives as equal alternatives: a 4-lane cross-section on SR 28 with traffic signals, and a 3-lane cross-section on SR 28 with modern roundabouts. In addition to the review of existing traffic conditions, analysis was conducted of the "near-term" (2008) conditions and "long-term" (2028).

Existing Traffic Activity

The primary roadway in the study area is State Route (SR) 28, which provides two travel lanes in each direction through Kings Beach. Caltrans counts indicate an average daily traffic volume of 24,100 vehicles per day (total in both directions) in the peak summer month, and 18,100 over the total year[1]. Between 1992 and 2002, peak-month volumes increased slightly (0.3 percent per year).

Detailed hourly traffic data was collected by Caltrans on SR 28 just to the east of SR 267 throughout the summer of 2002. The highest traffic volumes typically observed on Saturdays. There is a strong eastbound traffic flow on Friday afternoon/evening, and a strong mid-day peak in traffic volumes in the westbound direction on Sunday. One-way hourly volumes over the summer exceeded 1,000 vehicles per hour during 201 hours in the eastbound direction, and during 100 hours in the westbound direction. Caltrans winter traffic counts indicate that peak eastbound volumes are slightly lower than in the summer, while peak westbound volumes are substantially lower in winter than in summer.

Local streets consist of a grid of north-south streets mostly named after mammals (such as Chipmunk Street, Fox Street, Coon Street, Bear Street, and Deer Street) intersected by east-west streets mostly named after fish species (such as Speckled Avenue, Dolly Varden Avenue, Trout Avenue, and Brook Avenue). These Placer County roadways all provide a single travel lane in each direction and largely serve residential areas. There is little or no evidence of an existing "cut through" traffic pattern between SR 28 and SR 267

[1] In comparison, SR 28 in Tahoe City carries an average 23,800 vehicles per day in the peak month, and 17,000 vehicles per day over the entire year.

2008 Traffic Analysis

Traffic volumes for the 2008 analysis are estimated by factoring existing volumes by current traffic trends. As these trends show only modest growth, the 2008 volumes used in the analysis exceed current levels by only 20 vehicles per hour in each direction on SR 28, or roughly 2 percent.

As shown in the attached table, with a **four-lane cross-section and signalized intersections,** signalized intersections along SR 28 will operate at LOS A to C, while the roadway links will operate at LOS B.

Summary of Traffic Conditions

	With 3-Lane Roadway				With 4-Lane Roadway			
	2008		2028		2008		2028	
INTERSECTION LOS	Control	LOS (1)	Control	LOS (1)	Control	LOS (1)	Control	LOS (1)
SR 267	Rndbt	A	Rndbt	B	Signal	C	Signal	D (2)
Secline St.	Stop	F	Stop	F	Stop	F	Stop	F
Deer St	Stop	E	Stop	F	Stop	E	Stop	F
Bear St	Rndbt	A	Rndbt	B	Signal	A	Signal	A
Coon St	Rndbt	A	Rndbt	B	Signal	A	Signal	B
Fox St	Stop	F	Stop	F	Stop	F	Stop	F
Chipmunk St	Stop	F	Stop	F	Stop	E	Stop	F
ROADWAY LOS	EB	WB	EB	WB	EB	WB	EB	WB
# Days per Summer On Which Congestion Would Occur	56	72	108	108	0	0	0	0
# Hours per Summer of Congestion	191	302	903	1,178	0	0	0	0
# Hours per Summer TRPA Roadway LOS Standard Exceeded	384	538	1,063	1,303	0	0	0	0
Average Daily Hours of Congestion								
- On Fridays in August	4.4	5.0	11.2	13.0	0	0	0	0
- On Saturdays in August	5.2	7.2	10.6	12.0	0	0	0	0
- On Sundays in August	2.0	7.0	10.0	11.8	0	0	0	0
- On Other Weekdays in August	2.2	3.6	8.9	12.4	0	0	0	0
Maximum # of Hours of Congestion per Day	8	10	13	14	0	0	0	0

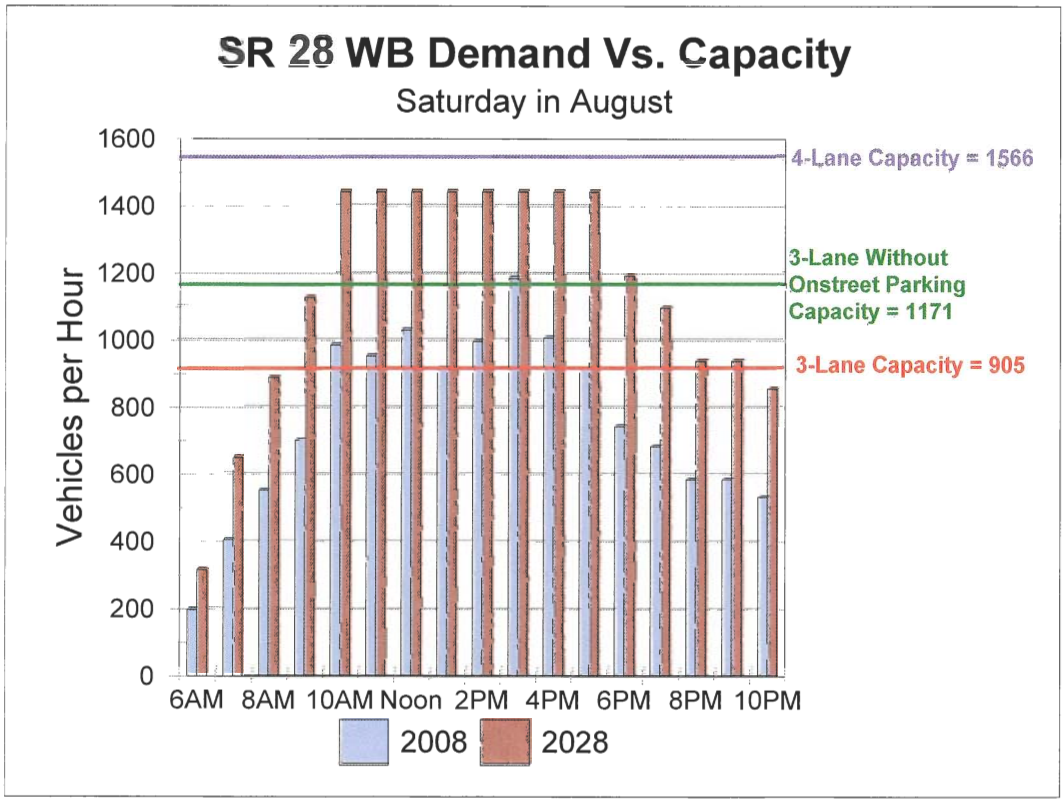
Note 1: Total intersection LOS reported for signals, worst approach intersection LOS reported for Stop and Roundbout controlled intersections.

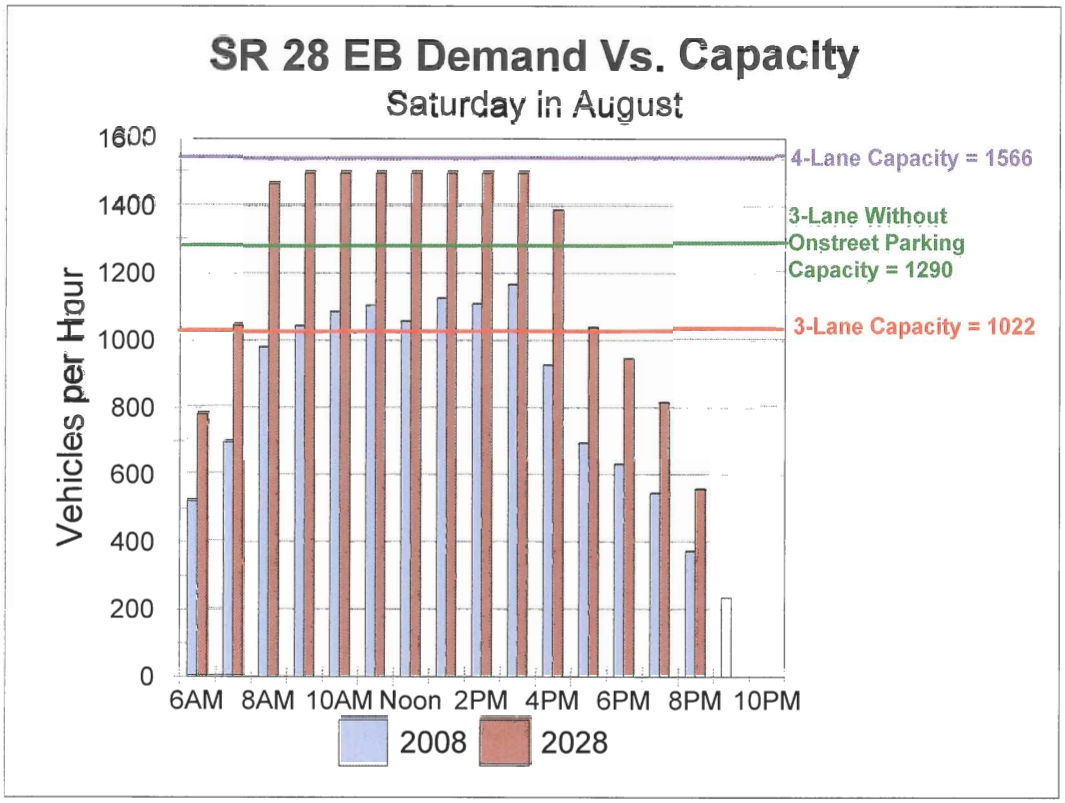
Note 2: Separate westbound right-turn lane required to avoid LOS F.

With a **three-lane cross-section and roundabouts**, the roundabouts were forecast to operate at LOS A, both for the roundabout as a whole and for the worst approach. Calculating roadway LOS required a detailed study of existing capacity along SR 28 in Tahoe City, which has a three-lane cross-section similar to that being considered in Kings Beach. Under peak summer conditions, the roadway in Tahoe City has a capacity of 730 vehicles per hour, which is less than half of the theoretical capacity of a two lane roadway, due to a combination of distracted recreational drivers, pedestrians crossing the roadway, bicyclists, on-street parking maneuvers,

drivers searching for parking, conflicting turning movements, and truck loading/unloading activity. Considering the relative level of these activities in Kings Beach versus Tahoe City, the capacity of a three-lane cross-section in Kings Beach is calculated to equal 910 vehicles per hour westbound and 940 vehicles per hour eastbound. At these levels, queues will start to form and drivers will begin to divert to parallel (neighborhood) roadways to avoid congestion.

Congestion and traffic diversion are forecast to occur for a total of 191 hours in the eastbound direction and 302 hours in the westbound direction over the course of the summer, and for at least one hour in the eastbound direction on 56 days and in the westbound direction on 72 days. Considering only the peak month of August, the average daily hours of traffic queues would be highest on Saturdays, with 5.2 hours of queues in the eastbound direction and 7.2 hours of queues in the westbound direction. Diverting traffic would exceed 300 vehicles per hour on 4 hours per year in the eastbound direction, and 11 hours per year in the westbound direction. At least some level of westbound congestion would form every day from roughly June 27th through August 27th, while eastbound queues would be more sporadic outside of the mid-August period. The following figures present the directional hourly volume and capacity over an August Saturday.





2028 Traffic Analysis

The 2028 analysis assumed full buildout of the TRPA Community Plans, full buildout of residential development in the Tahoe Basin, full buildout of the Town of Truckee, 96 percent of buildout of the revised Preferred Alternative of the draft Martis Valley Community Plan, and growth in traffic passing completely through the Truckee / North Tahoe Region. No growth in traffic volumes in Kings Beach was included to reflect additional development on the West Shore or in Alpine Meadows/Squaw Valley, as SR 28 in Tahoe City effectively "meters" traffic. In addition, the North Stateline pedestrian-actuated signal was assumed to continue to meter peak traffic flows along SR 28. The resulting 2028 volumes are estimated to exceed existing volumes by approximately 24 percent in the eastbound direction and 33 percent in the westbound direction.

Under the **Four-Lane / Signals Alternative**, the SR 28/SR 267 would require a separate westbound right-turn lane to attain an adequate (D) LOS. Other signals would operate at LOS A or LOS B. Roadway LOS under this roadway configuration would be LOS D.

With the Three-Lane / Roundabout Alternative, roundabouts will operate at LOS B for the SR 28 / SR 267, SR 28 / Bear Street, and the SR 28 / Coon Street intersections. Over the course of the summer, roadway capacity would result in traffic congestion and diversion for 903 hours in the eastbound direction and 1,178 hours in the westbound direction. Queuing occurs over at least one hour on every one of the 108 days from June 15 through the end of September in both the eastbound and the westbound directions. In August, westbound queuing would occur 13

hours per day throughout the week, while eastbound queuing would occur up to 11.2 hours on Saturdays. Diverted traffic would exceed 400 vehicles per hour on 321 hours in the eastbound direction, and 540 hours in the westbound direction.

Impact on Residential Streets

It is estimated that 60 percent of cut-through traffic would occur on Coon Street, resulting in a design cut-through volume of approximately 800 vehicles per day in 2008 and 5,500 vehicles per day in 2028. Adding these volumes to the existing volume of 1,200 results in total traffic volumes of 2,000 and 6,700 vehicles per day in 2008 and 2028, respectively. The increase in traffic would result in substantial safety deficiencies.

Cut-through traffic between SR 28 and SR 267 could be eliminated by closing Speckled Avenue and Dolly Varden Avenue just east of SR 267, requiring all traffic into and out of the residential neighborhood would then be provided via SR 28. A series of one-way streets and diagonal traffic diverters would also be needed to eliminate the east-west streets as a parallel route to SR 28. However, by eliminating the ability of neighborhood streets to relieve traffic queues on SR 28, traffic queues and delays on the state highways would increase dramatically. For a typical August Saturday in 2008, for example, the maximum traffic queue would be 4.3 miles in length in the westbound direction, and 2.5 miles in length in the eastbound direction. In addition, some local streets would inevitably be more attractive than others, and would thus carry increased local traffic volumes.

Potential Means of Balancing Traffic Demand and Roadway Capacity

The following measures were evaluated as a means of addressing the traffic queue impacts associated with the 3-lane roadway section:

- Expansion of public transit services to address the 2008 deficiency would require roughly 450 vehicles per hour to be removed, equivalent to carrying roughly 900 transit passengers per hour. This would require operation of 23 full buses per hour in each direction, which is infeasible.

- A new roadway could be constructed, effectively bypassing downtown Kings Beach by connecting SR 267 north of Kings Beach with SR 28 to the east. However, a new roadway of this magnitude is not consistent with TRPA's plans and policies, and is not feasible.

- The capacity of SR 28 could be improved by eliminating all on-street parking through the key section from Deer Street to Fox Street, which would increase the capacity of SR 28 by roughly 30 percent. For 2008 conditions this would reduce congestion to only 7 hours per summer over 2 days in the eastbound direction, and 15 hours over 5 days in the westbound direction. By 2028, however, the growth in traffic volumes would result in 517 hours of traffic queues over 100 days in the eastbound direction and 774 hours of traffic queues over 108 days in the westbound direction.